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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER
LE, LANA N

ART UNIT	PAPER NUMBER
2684	

DATE MAILED: 01/16/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.	Applicant(s)
09/400,974	Sato et al
Examiner	**Art Unit**
Lana Le	2684

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *May 31, 2001*

2a) ☒ This action is **FINAL.** 2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-40* is/are pending in the applica

4a) Of the above, claim(s) _____ is/are withdrawn from considera

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1-40* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirem

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

a) ☐ All b) ☐ Some* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

15) ☒ Notice of References Cited (PTO-892)

16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____

18) ☐ Interview Summary (PTO-413) Paper No(s). _____

19) ☐ Notice of Informal Patent Application (PTO-152)

20) ☐ Other:

RESPONSE TO AMENDMENT

Response to Arguments

1. Applicant's arguments with respect to claims 1-40 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

2. Claims 1-2, 7-8, 11, 18-25, 30-35, 38-39 are rejected under 35 U.S.C. 102(e) as being anticipated by Wax et al (6,249,680).

Regarding claim 1, Wax et al discloses a millimeter band signal transmitting/receiving system, comprising a transmitter transmitting a signal wave with a millimeter band a propagation path forming portion forming at least one indirect propagation path for propagation of the signal wave from 30 to reflector 34 to 38; a receiver receiving simultaneously a plurality of the signal waves from a plurality of propagation paths including a line of sight propagation path from 30 to 38 to the transmitter and the at least one indirect propagation path (figure 1, column 1, lines 30-37).

Regarding claim 2, Wax et al discloses the millimeter band signal transmitting/receiving system according to claim 1, wherein the propagation path forming portion includes a reflector 36 arranged to reflect the signal wave transmitted frorm the transmitter and direct the reflected signal wave to the receiver 38 (fig. 1).

Regarding claim 3, Wax et al discloses the millimeter band signal transmitting/receiving system according to claim 2, wherein the reflector 36 is arranged substantially almost in parallel to a line of sight between the transmitter and the receiver (fig 1).

Regarding claim 7, Wax et al further discloses the millimeter band signal transmitting/receiving system according to claim 2, wherein a plurality of the reflectors 32, 34 and 36 are arranged to form the plurality of propagation paths for propagating the signal waves to the receiver (col 1, lines 30-39).

Regarding claim 8, Freeburg discloses the millimeter band signal transmitting/receiving system according to claim 1, wherein the receiver always simultaneously receives the plurality of signal waves from the plurality of propagation paths in a normal state (col 1, lines 30-39).

Regarding claim 11, Wax et al discloses the millimeter band signal transmitting/receiving system, comprising a plurality of transmitters 30 and 50 for a millimeter band and a receiver 38 arranged to simultaneously receive a plurality of signal waves output from the plurality of transmitters, the plurality of signal waves transmitted from the plurality of transmitters having a same frequency (col 1, lines 30-37).

Regarding claim 8 and 14, Freeburg (US 5,355,520) didn't specifically discloses the millimeter band signal transmitting/receiving system according to claim 11, wherein the receiver always simultaneously receives the plurality of signal waves in a normal state. Wax discloses the millimeter band signal transmitting/receiving system according to claim 11, wherein the receiver always simultaneously receives the plurality of signal waves in a normal state (col 1, lines 30-37). It would have been obvious to one of ordinary skill in the art at the time the invention was made to add the multipath of Wax et al in order to have a lot of transmission paths available for diversity reception.

Regarding claim 18, Wax et al discloses a millimeter band signal transmitting/ receiving system, comprising: at least one transmitter transmitting a signal through an associated transmit antenna along a plurality of propagation paths of said signal formed by said associated transmit antenna including a line of sight propagation path between said associated transmit antenna and a receive antenna (col 1, lines 30-37); a receiver receiving the signal through said receive antenna, wherein, in a normal state when said line of sight propagation path is unobstructed, said receiver receives the signal through each of the plurality of propagation paths including said line of sight propagation path (col 5, lines 60-63; fig. 4), and wherein, in an obstructed state when said line of sight propagation path is obstructed, said receiver receives the signal through each of the plurality of propagation paths except said line of sight propagation path (col 1, lines 49-51).

Regarding claim 19, Wax et al discloses the millimeter band signal transmitting/ receiving system of claim 18, wherein at least a portion of said plurality of propagation paths are formed by at least one reflector 34 (fig. 1).

Regarding claim 20, Wax et al discloses the millimeter band signal transmitting/ receiving system of claim 19, wherein said at least one reflector 36 has a surface arranged substantially parallel to said line of sight propagation path (fig. 1).

Regarding claim 21, Wax et al discloses the millimeter band signal transmitting/ receiving system of claim 19, wherein said at least one reflector includes two reflectors.

Regarding claim 22, Wax et al discloses the millimeter band signal transmitting/ receiving system of claim 21, wherein at least one of said plurality of propagation paths from mobile 30 to 32 to 38 of said signal is formed by reflection from each of said two reflectors .

Regarding claim 23, Wax et al discloses the millimeter band signal transmitting/ receiving system of claim 18, wherein said at least one transmitter is a single transmitter 38.

Regarding claim 24, Wax et al discloses the millimeter band signal transmitting/ receiving system of clairr 18, wherein said at least one transmitter includes two transmitters 30 and 50 and two associated transmit antennas, one of 30 and one of 50 (fig. 1), wherein each of said two associated transmit antennas provides a separate line of sight propagation path to said receive antenna (see fig. 1; line of sight from 50 and line of sight from 30).

Regarding claim 25, Wax et al discloses the millimeter band signal transmitting/ receiving system of claim 24, wherein said two transmitters 30 and 50 are synchronized with each other.

Regarding claim 30, Wax et al discloses the millimeter band signal transmitting/ receiving system of claim 18, wherein a portion of said plurality of propagation paths are formed by interaction with a structural component of a building (col 1, lines 31-34).

Regarding claim 31, Wax et al discloses the millimeter band signal transmitting/ receiving system of claim 18, wherein said receive antenna is a single receive antenna at 38.

Regarding claim 32, Wax et al discloses the millimeter band signal transmitting/ receiving system of claim 18, wherein said receiver simultaneously receives the signal through each of an unobstructed direct plurality of propagation paths from 30 and 50.

Regarding claim 33, Wax et al discloses the millimeter band signal transmitting/ receiving system of claim 1, wherein said receiver receives said signal wave through said line of sight propagation path when said line of sight propagation path is not blocked from 30 to 38 (fig. 1).

Regarding claim 34, Wax et al discloses the millimeter band signal transmitting/ receiving system of claim 1, wherein said receiver receives said signal wave only through said at least one indirect path when said line of sight propagation path is blocked (col 1, lines 49-50).

Regarding claim 35, Wax et al discloses the millimeter band signal transmitting/ receiving system of claim 11, wherein said receiver receives one of said plurality of signal waves through at least one line of sight propagation path from 30 directly to 38 between at least one of said plurality of transmitters and said receiver (Fig. 1).

Regarding claim 38, Wax et al discloses the millimeter band signal transmitting/ receiving system of claim 1, wherein said at least one indirect propagation path is formed in a main lobe of a transmit antenna.

Regarding claim 39, Wax et al discloses the millimeter band signal transmitting/ receiving system of claim 1, wherein said line of sight propagation path is formed in a side lobe of a transmit antenna.

3. Claims 9-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Freeburg (US 5,355,520).

Regarding claim 9, Freeburg discloses the millimeter band signal transmitting/receiving system according to claim 1, wherein the receiver and the transmitter are provided inside a house, the propagation path includes a structural component defining an internal space of the house and reflecting a signal wave transmitted from the transmitter, and the transmitter is spaced by a prescribed distance from the structural component defining the internal space of the house for transmitting the signal wave with the millimeter band at a prescribed transmission angle (col 3, lines 15-55).

Regarding claim 10, Freeburg discloses the millimeter band signal transmitting/receiving system according to claim 9, wherein each of the prescribed distance and the prescribed transmission angle is determined depending on a region for propagation of the plurality of signal waves and a positional relationship between the transmitter and the receiver (col 3, lines 40-55).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 4, 5, 6, 15-17, 36-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Freeburg in view of Wax et al (US 6,249,680).

Regarding claim 4, Freeburg discloses the millimeter band signal transmitting/receiving system according to claim 2, wherein the reflector has thin film including aluminum (col 3, lines 23-25, col 6 lines 1-24). It would have been obvious to one of ordinary skill in the art to use a certain kind of material such as aluminum or metal to reflect signals.

Regarding claim 5, Freeburg discloses the millimeter band signal transmitting/receiving system according to claim 2, the reflector has a surface covered by an insulating material (col 3, lines 23-25; col 6, lines 1-24). It would have been obvious to one of ordinary skill in the art that the buildings or objects which are used as reflectors has insulating materials so that reflection can occur without signal absorbtion.

Regarding claim 6, Freeburg discloses the millimeter band signal transmitting/receiving system according to claim 2, wherein the reflector has a surface covered by a transparent insulating material (col 6, lines 14-24).

Regarding claim 15, Freeburg discloses a house provided with a millimeter band signal transmitting/receiving system, comprising a structural component defining an internal space and a millimeter band signal transmitting/receiving system, wherein the millimeter band signal transmitting/receiving system includes a transmitter transmitting a signal wave with a millimeter band a propagation path forming portion arranged in the structural component for forming at least one propagation path for propagation of the signal (col 3, lines 15-55 and col 5, lines 9-20). Wax et al further discloses a receiver simultaneously receiving a plurality of signal waves through a plurality of propagation paths including a line of sight propagation path to the transmitter and the at least indirect one propagation path (col 1, lines 30-37). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide simultaneous diversity reception at the receiver in order to receive different multipath signals from different directions.

Regarding claim 16, Freeburg discloses a house provided with a millimeter band signal transmitting/receiving system according to claim 15, wherein the propagation path forming portion has a reflector reflecting an output from the transmitter and the reflector is arranged on a surface of the component (col 3, lines 35-55).

Regarding claim 17, Freeburg discloses a house provided with a millimeter band signal transmitting/receiving system according to claim 15, wherein the propagation path forming portion has a reflector 18 reflecting an output from the transmitter and the reflector is arranged inside the component (col 2, lines 30-35).

Regarding claim 36, Wax et al discloses the house provided with a millimeter band signal transmitting/ receiving system of claim 15, wherein said receiver receives one of said plurality of signal waves through said line of sight from 3o directly to 38 propagation path when said line of sight propagation path is not blocked (fig. 1).

Regarding claim 37, Wax et al discloses the millimeter band signal transmitting/ receiving system of claim 15, wherein said receiver only receives said plurality of signal waves through said at least one indirect propagation path from 30 to 34 to 38 when said line of sight propagation path is blocked (col 1, lines 49-50).

6. Claims 12-13, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wax et al in view of Kagami (US 5,479,443).

Regarding claim 12, Wax et al discloses the millimeter band signal transmitting/receiving system according to claim 11, Kagami further discloses wherein each of the plurality of transmitters includes a local oscillator oscillating at a prescribed local oscillator frequency for generating the signal wave at the same frequency (col 9, lines 25-36). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a common frequency for the transmitters to generate simultaneous signals.

Regarding claim 13, Kagami discloses the millimeter band signal transmitting/receiving system according to claim 11, wherein the local oscillators are in synchronization with each other. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a common frequency for the transmitters to generate simultaneous signals.

Regarding claim 26, Kagami et al discloses the millimeter band signal transmitting/ receiving system of claim 25, wherein said two transmitters share a common local oscillator 321 (col 9, lines 38-48).

7. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wax et al in view of Evans et al (US 5,920,813).

Regarding claim 27, Wax et al discloses the millimeter band signal transmitting/ receiving system of claim 18, wherein said signal is a video signal (col 4, lines 65- col 5, line 2; col 8, lines 13-20). It would have been obvious to one of ordinary skill in the art at the time the invention was made to add the video signals to use microwave frequencies.

8. Claim 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Freeburg and Wax et al (US 6,249,680) and further in view of Keskitalo et al (US 6,128,486).

Regarding claim 28, Keskitalo further discloses the millimeter band signal transmitting/ receiving system of claim 18, wherein said line of sight propagation path between said associated transmit antenna and the receive antenna is formed in a side lobe B of said associated transmit antenna. It would have been obvious to one of ordinary skill in the art at the time the invention was made to add a side lobe to signal the incoming beam direction of the signal from the transmitter.

Regarding claim 29, Wax et al discloses the millimeter band signal transmitting/ receiving system of claim 18, wherein said plurality of propagation paths of said signal except said line of sight propagation path are formed in a main lobe A (fig. 3) of said associated transmit antenna.

Regarding claim 40, Keskitalo discloses the millimeter band signal transmitting/ receiving system of claim 15, wherein said line of sight propagation path is formed in a side lobe B of a transmit antenna (fig. 5). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a beam lobe to signal the incoming beam direction of the signal from the transmitter.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 308-6306 (for formal communications intended for entry)

or:

(703) 308-6296 (for informal or draft communications, please label "PROPOSED" or "DRAFT"

Hand-delivered responses should be brought to the Crystal Park II, 2021 Crystal Drive, Arlington VA, Sixth Floor (Receptionist).

Any inquiry concerning this communication or communications from the examiner should be directed to Lana Le whose telephone number is (703) 308-5836 and to the supervisory patent examiner Daniel Hunter whose telephone number is (703) 308-6732.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-3900.

Lana Le

January 09, 2002

DANIEL HUNTER
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600